

Application No. 10/730,137
Amendment dated 21 December 2004
Reply to Office Action of 27 September 2004

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Amendments to the Specification

Replace the first paragraph after the heading "Background of the invention" on page 1 with the following:

In the process of lithographic printing, also known as offset printing, printing plates are imaged with the data to be printed, processed chemically and mounted on the press. Almost all lithographic printing presses require the edge of the plate to be bent in order to attach it to the plate cylinder inside the press. Modern platemaking relies on Computer-to-Plate (CTP) platesetters, which expose the plate using high-powered lasers or UV light. After exposure, the plate has to be developed by running through a plate processor. Sometimes the plate is also run through an oven for ~~increases~~ increased durability. After processing, one or two edges of the plate are bent by a plate bender.

Replace the first full paragraph on page 2 with the following:

The punching of the plate can be done before imaging, while the plate is in the CTP platestter ~~platesetter~~, after imaging of ~~the plate~~ the plate but before its processing, or after processing of the plate. When the ~~puncing~~ punching is done as part of the imaging process in the CTP platestter ~~platesetter~~, it is fully automated. The reason why the bending could not be automated in the same way, is simple: the plate has to be flat in order to be processed, as the processing relies on the uniform nature of a flat plate to expose each part equally to the action of the processing chemicals. This is also the reason why, whenever some bending inside the CTP platestter ~~platesetter~~ was required in the prior art (for example, to curve the plate for a better fit to the drum), any residual bend had to be straightened out before the plate could be fed to the plate processor. The art of platemaking, including CTP platesetters, has been known for at least 20 years and needs no further explanation here. CTP platesetter machines are available from vendors such as Creo (Canada). Automatic punching and bending systems are available from vendors such as Nela-Ternes (USA).

Replace the brief description of Fig. 2 on page 3 with the following:

Fig. 2 is a representation of the steps required to produce a press-ready ~~plate~~ plate according to one embodiment of the present invention.

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Replace the brief description of Fig. 3 on page 3 with the following:

Fig. 3 is a view of the inside of a CTP platesetter according to one embodiment of the invention.

Replace the brief description of Fig. 4 on page 3 with the following:

~~Fig. 4 is a cross section~~ Figs. 4a-4c are cross sections of a punching and bending device mounted inside a CTP platesetter in three different positions according to one embodiment of the present invention.

Replace the second full paragraph on page 4 with the following:

One aspect of the invention is provides a method for imaging of processless plates in a CTP machine incorporating a bender. A further aspect of the invention is provides the incorporation of the bender inside the CTP platesetter.

Replace the paragraph spanning pages 4 and 5 with the following:

Referring now to Fig 3: a CTP platesetter 1 includes an imaging system, shown schematically as plate 2 being imaged on drum 3 by imaging head 4. No further details of the CTP platesetter operation are shown, as CTP platesetters are commercially available and well understood. After the plate is imaged, it is bent. To increase throughput, a previously imaged plate 5 can be bent while plate 2 is being imaged. The plate edges can be punched, if so desired, before or after imaging by punches 6. No details of punch operation are given as many CTP platesetters incorporate automatic punching and it is considered prior art to this invention. For example, CTP platesetters sold by Creo (Canada), Agfa (USA) and Dai-Nippon Screen (Japan) include automatic punching either before or after imaging. The edge of plate 5 is ~~being~~ sensed by optical means (laser or video camera) or by contacting register pins 13. Since the For plates 5 which are made of aluminum or other conductive materials, it is easy to sense when the edge of plate 5 is touching the register pins 13, as it plate 5 as it can be used to close an electrical circuit between pins 13. Closing the circuit activates punches 6 and pushes clamp down bar 7 against stationary bar 8, followed by bending using folder bar 9. Folder bar 9 pivots on pivot 10 and is activated, by the way of example, by pneumatic cylinders 12. Clamp down bar 7 is also pneumatically activated by cylinders 11.

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Replace the paragraph spanning pages 5 and 6 with the following:

Referring now to Fig 4, the various steps in punching and bending are shown in Fig4-a to Fig 4-c. In Fig 4-a plate 5 is moved into the bender until it touches register pins 13, closing an electrical circuit and starting the cycle. An equivalent method of registration, such as a video camera or laser edge detection can be used as well. When the electrical circuit is closed plate 5 touches pins 13, pneumatic cylinder 11 clamps plate 5 using bar 7 and stationary bar 8. Referring now to Fig4-b: in the clamped position, punches 6 are activated and punch the plate, and pneumatic cylinder 12 is activated and rotates folder bar 9 around pivot 10. The part is similar to the well-known sheet metal folders, used not only in plate bending, but in many sheet metal applications. In Fig4-c, folder bar 9 has completed the bend and will retract. Both punches 6 and clamp bar 7 can be retracted, freeing the plate to be delivered out of the ~~CTP platesetter~~ CTP platesetter 1, typically into a plate stacker (not shown), from which the press operator will pick them up.

Replace the second full paragraph on page 6 with the following:

~~It is also obvious that~~ In other embodiments of the invention, the order of operation can be changed. Thus, the punching and/or bending can be performed before imaging. If punching is performed before imaging, the punched holes can be used to register both the imaging and the bending in a similar manner to prior art systems.